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[An interpretive plan for the endangered virginia round leaf birch (Betula uber (Ashe) Fernald)]

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INTRODUCTION

The Virginia round-leaf birch (Betula uber (Ashe) Fernald) was officially listed as an endangered species on April 26, 1978 (U. S. Fish and Wildlife Service, 1978). It is the only woody plant in North America so recognized under the Endangered Species Act of 1973. Since its rediscovery in August 1975, it has gained wide public attention (Kinkead, 1976a, 1976b; Preston, 1976). This notoriety may have contributed to subsequent vandalism of the population.

Considerable amount of effort has gone into the protection and management of the species. Public information and interpretation has been a key tool of management in that it has been designed to provide information to the public while directing their attention to the one area where protection can best be afforded. This paper explores the informational and interpretive efforts to date, both in place and planned, and how this has blended with and added to the protection plans for the known population.

HISTORICAL PERSPECTIVE

Original Discovery

Betula uber was originally discovered by W. W. Ashe in 1914, presumably along the banks of Dickey Creek in Smyth County, Virginia (Mazzeo, 1974). Four years later, Ashe (1918) published a description of the taxon under the combination (*Betula lenta* var. *uber*. The taxon was considered to be very similar to the typical black or sweet birch (*B. lenta* L.), except in its foliage characteristics. No mention was made of the number of individuals in the population or their exact location. M. L. Fernald later examined voucher specimens and in 1945 elevated *B. uber* to the rank of species and transferred it from series *Costatae* (dark-barked tree birches) to series *Humiles* (shrub birches). A. G. Johnson (1954), who later visited the type locale of *B. uber*, was unsuccessful in locating the species. He concluded that Ashe's birch was probably an aberrant individual which had subsequently been eliminated and was not worthy of further consideration, at least as a species. Attempts by other botanists in the 1950's and 1960's at locating *B. uber* were likewise unsuccessful.

Rediscovery

In the early 1970's, P. M. Mazzeo (1971, 1973, 1974) became interested in *B. uber* as part of his studies of the Betulaceae in Virginia. In addition to the seven herbarium specimens collected by Ashe, Mazzeo discovered a previously uncited and undated specimen collected by H. B. Ayres bearing the location "Cressy Creek". Cressy Creek parallels Dickey Creek approximately 2 km. to the east, with both creeks draining the Rye

Valley and flowing into the South Branch of the Holston River.

In his 1974 discussion of the B. uber problem, Mazzeo pointed out that no one had reportedly visited the Cressy Creek site. D. W. Ogle, a biologist and naturalist on the faculty of nearby Virginia Highlands Community College, became interested in B. uber upon reading Mazzeo's accounts. He set out to locate individuals of the species and in August 1975 was successful in doing so along the banks of Cressy Creek (Ogle and Mazzeo, 1976). Some controversy exists in crediting the rediscovery in that C. F. Reed (1975), a biologist from Coppin State College near Baltimore, claims to have done so one week prior to Ogle (Preston, 1976).

Eleven adult trees were located in the original discovery. By September of the same year, subsequent searches had brought the total number of individuals to 34 (12 adults, 1 sapling, 21 seedlings). Additional searches have led to the conclusion that at least 40 individuals (14 adults, 26 seedlings/saplings) must have existed in 1975. All were apparently part of the same local population situated in a narrow band (60m by 1 km) along Cressy Creek.

The B. uber population was divided among three contiguous properties, as follows: U. S. Forest Service (Jefferson National Forest), 1 adult tree, the largest in the population, and 1 "sapling", the latter a sprout resulting from damage to a large individual cut back during routine transmission corridor maintenance; a private landowner, 1 adult tree and 24 seedling/saplings; and a second private landowner, 12 adult trees and one sapling.

Intensive searches along the same stream and in adjacent stream areas (including Dickey Creek) proved unsuccessful. Thus, there has been no

conclusive evidence that B. uber ever existed at any locale other than the existing Cressy Creek site. Ogle suggested that Ashe may have committed an error in his original reference to the Dickey Creek locale (Preston, 1976).

As of July 1979, there were 20 individuals remaining in the natural population along Cressy Creek, with no recorded recruitment (reproduction) since prior to 1975. Most of the remaining individuals have had varying amounts of tissue removed for both well-intentioned, as well as misguided and/or perhaps ill-intentioned purposes.

Protection, Management and Research Efforts

Initial efforts at protection were made by the private landowners in early spring 1976 when they erected high fences around their individual segments of the population. The fences were designed mainly to prevent grazing damage, but also to reduce inadvertent damage by curious persons.

In August 1976, the U. S. Forest Service (Jefferson National Forest) developed a protection plan for B. uber on public lands (Beaver & Brock , 1976). It called for: (1) constructing a chain-link fence (with gate and lock) around each of the two individuals, (2) developing methods for controlling erosion along Cressy Creek, (3) notifying public utilities of the location of trees in or near their right-of-ways and required approval of Forest Service personnel before maintenance work proceeds, (4) contacting adjacent landowners to make them aware of the importance of the trees and to caution them on the use of fire and chemicals in the area, (5) cessation of stocking of hatchery trout in the stream by the State, (6) notifying a local munitions plant (then inactive) of the location and importance of the trees, (7) remarking Forest Service property lines adjacent to the location of the trees, (8) submission of

necessary information to request designation of the site as a Botanical Area, (9) covering the area with a Forest Supervisor's Closure Order, which in effect prevents trespass, (10) constructing visitor information facilities adjacent to the large tree on Forest Service property, and (11) conducting a meeting to determine the process for developing a detailed research plan.

Most of the above recommendations had already been carried out at the time the protection plan was released. Furthermore, the Forest Service was already in the process of contacting professionals to assemble for development of a research plan.

Accordingly, a group of 10 persons representing the U. S. Forest Service, U. S. Fish & Wildlife Service, U. S. National Arboretum, Virginia Highlands Community College, Virginia Polytechnic Institute and State University, and including the two private landowners, met on May 18-19, 1977 to develop a research plan. In its deliberations, the group concluded that research efforts should be integrated with a general management plan. The group thus proceeded to outline a plan for preservation of B. uber, which included: (1) protection of the existing natural population, (2) propagation of the population and broadening the genetic base to the extent possible, (3) search for new populations, (4) basic research on species biology, (5) public relations, (6) gaining financial support for management and research, and (7) providing a mechanism for effective management of the gene pool.

Appendix I includes the minutes of the first meeting of the group, which was subsequently designated the Betula uber Protection, Management and Research Coordinating Committee. The remainder of this paper deals

with only one segment of round-leaf birch activities, information and interpretation.

FACTORS TO CONSIDER IN THE DEVELOPMENT AND PRESENTATION OF AN INTERPRETIVE PROGRAM

Overview

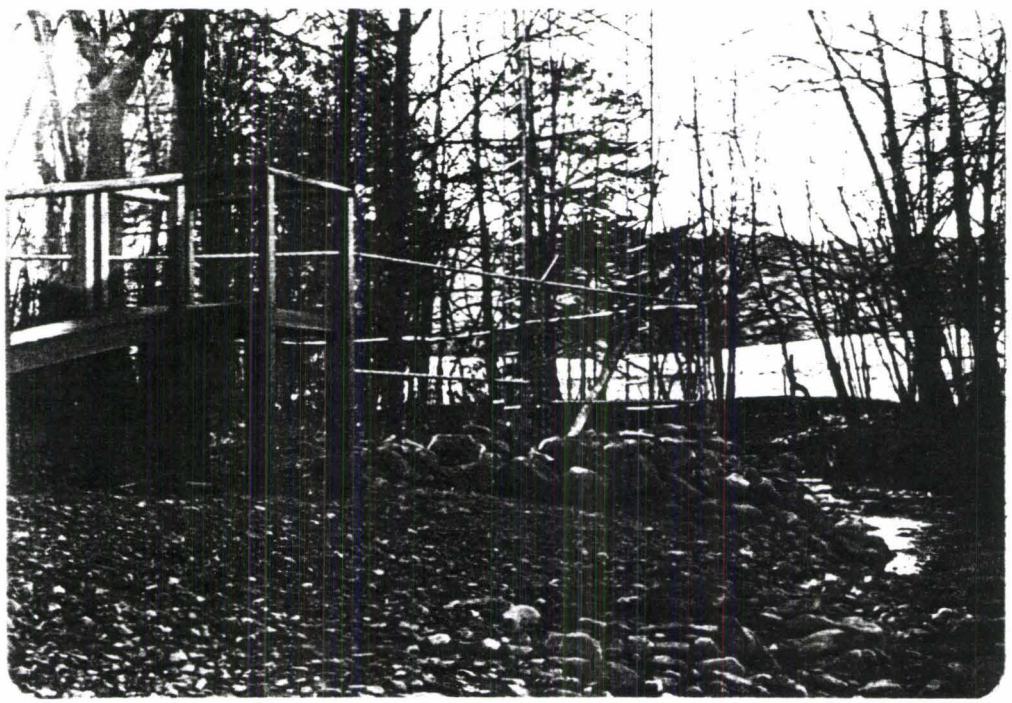
The overriding goal of interpretation is the translation of information into understandable terms. In settings used by recreationists, interpretation seeks to make natural or cultural history understandable and enjoyable (Wagar, 1974a). In this project, the goal of interpretation is to make the complex informational base of Betula uber --e.q., its biological description, its endangered status, its relationship to other organisms, and strategies for its protection and management--both interesting and understandable for the visitors to the Mount Rogers National Recreation Area. Successful interpretation is dependent upon the clear articulation of program objectives, upon attracting and holding visitors' attention, and upon frequent evaluation of effectiveness of communications (Wagar, 1974a; Wagar, 1974b; Wagar, 1976).

Location for Interpretation

Several opportunities for interpreting Betula uber are available in the local area. Interpretation can take place at the site of the endangered tree and at such nearby places as the Mount Rogers National Recreation Area Visitor Center and Grindstone Campground.

On site interpretation would be possible at any of the three sites, two sites on private land and the site on National Forest. However, the Betula uber Protection, Management and Research Coordinating Committee selected the large, single population on National Forest for public

viewing because 1) thus exposed only a single individual of the population to the public, 2) discouraged public viewing on private lands where they were harder to protect, 3) protected private property rights, 4) selected site was more adaptable for public use. All aspects of the interpretive program will focus attention only on the individual on National Forest land, and thus interpretation will in itself become a management tool for the protection of the present population.



Overall Shot of Area

On site interpretation would permit the public to experience the rare B. uber in its natural conditions through multiple senses. Experienced interpreters and researchers have shown such contact to be effective in stimulating interest and learning (Tilden, 1967; Screven, 1969; Van Matre, 1972).

Off Site

On the other hand, Wagar (1976) and Dutcher and Asmuss (1970) have pointed to the problem of providing interpretation where the public does not visit or notice. Because Betula uber does not occur along the main traffic arteries through the National Recreation Area, some interpretation must take place away from the site. Thus, the story will be told at the Visitor Center and Grindstone Campground through various media. At these areas the visitor will be encouraged to visit the actual site of the endangered tree.

Media for Interpretation

A variety of interpretive media exists for making Betula uber understandable for the public. Sharpe (1976) has classified these media into personal (attended) services and non-personal (unattended) services. Personal services include manned visitor stations, conducted walks, evening programs, and demonstrations. The non-personal media include audio devices, written materials, signs, labels, publications, self-guided activities and exhibits. Each type of service has advantages. For example, personal interpretation takes advantage of the warmth and personality of the interpreter, permits adaptation of the message to the audience, permits two-way communications, and enables the interpreter to take advantage of an unexpected event. Non-personal interpretation, on the other hand, is generally less expensive, requires fewer personnel and is more available to the public (Roggenbuck and Sharik, 1977).

A combination of personal and non-personal services were selected to achieve the interpretation of the round-leaf birch. For example, campfire programs on Betula uber will be given by the Forest Service Naturalist at

the Grindstone Campground followed the next day by field trips to the site. An equivalent story will be told through a slide/tape program and exhibit at the Mount Rogers NRA Visitor Center with a live specimen available for viewing, and a display will be installed at the site of the selected natural population. Complete details will be covered later in the detailed plans for these areas of interpretation.

This multi-media approach adapted to the subject and setting should enable us to take advantage of the benefits and to lessen the weaknesses of each type of medium. In addition, it has been shown that park visitors prefer a combination of media to a single medium (Mahaffey, 1969).

Audience Attention

Accomplishment of interpretive objectives is impossible without audience attention. Wagar (1974a, 1976) has suggested several techniques to attract and to hold attention. A basic requirement is that interpretation must be located where people can easily find it. Given this, a major component of the Betula uber interpretive effort will be in the main lobby of the Mount Rogers NRA Visitor Center. Secondly, the introductory statement of any interpretive message is critically important. For example, Boulanger and Smith (1973) found that offering the visitor valuable knowledge or skills or beginning with a discrepant or seemingly self-contradictory statement aroused the interest of the audience.

Holding audience interest is dependent upon both the subject matter and the method of presentation. Washburne and Wagar (1972) found that visitor interest in exhibits was greatest among those which depicted violence or danger. This was followed by interest in animals and ecological relationships. Therefore, interpretation of B. uber will stress the danger of the

loss of the species and its relationships to other organisms in the ecosystem.

The types of presentations that best hold visitor interest are those which are dynamic, rewarding, and easy to understand (Wagar, 1976). In a study of four visitor centers, Washburne and Wagar (1972) found greatest interest in interpretation with motion, recorded sound, and shifting lighting. In contrast, interest was lowest for inert presentations involving mounted photos and written labels. Mahaffey (1969) has reported that for self-guiding tours, visitors preferred message recorders over signs and leaflets. Similarly, Wagar (1976) found that interpretation using portable tape players and cassettes provided significantly greater enjoyment and short-term retention of information on a visitor trail than either trail signs or a trail leaflet. Interpretation of B. uber will be made dynamic through the use of a slide/tape program in the visitor center, and through careful training of the interpretive naturalist.

Several techniques have been suggested for making interpretation rewarding for the visitor. On the theory that getting the right answer to a question is rewarding, Wagar (1976) programmed a nature trail in which visitors were asked a question at the bottom of each sign and then were given the right answer on the next sign. Children remembered more from these question-and-answer signs than from the usual signs. Another mechanism for reward is to permit the visitor to have an effect on something. Wagar (1972) developed a recording quizboard on which visitors answered four questions by pushing buttons. Each time a correct button was pushed, a "correct answer" panel lighted up and the visitor was presented with the next question. A similar quizboard could be developed for

"teaching" ecological concepts of endangered species management.

Making the interpretive message easy to understand requires that familiar words and examples be used, difficult reading material be avoided, presentations be tailored to the audience, and that the message have a meaningful structure (Wagar, 1976). Generally short sentences with little words are easier to understand than long sentences with big words, yet Hunt and Brown (1971) found much interpretive material violated this principle and was very difficult reading.

There is also evidence that people on vacation tend not to read interpretive signs. For example, McDonald (1969) found that only about 10 percent of the visitors on a highway in Yellowstone Park stopped at the wayside exhibits and less than half of them read the signs. Shiner and Shafer (1975) reported that visitors at the Adirondack Museum in New York viewed exhibits for only 15 to 64 percent of the time actually required to read the exhibit material. Listening is easier than reading; also with the recorded message, the visitor can listen to information without looking away from the object of interest. Finally, research has shown that rather detailed information on recorded messages can be presented without visitor fatigue (Wagar, 1976). Given these findings, the written word will be used sparingly in the interpretation of Betula uber, and such written text as is considered necessary will be carefully analyzed for readability.

Many social scientists have pointed to the need to understand the background and social-demographic-psychological characteristics of the audience when planning interpretive presentations (Wagar, 1974; Wagar, 1976; Field and Wagar, 1976; Roggenbuck, 1977). For example, age, sex, education,

knowledge of subject matter, place of residence, length of stay, occupation, size of group, and reasons for the park visit all seem to influence preference for and effectiveness of interpretive programs. Existing data on the characteristics of visitors to Mount Rogers will be analyzed and incorporated into the planning of interpretive programs on B. uber.

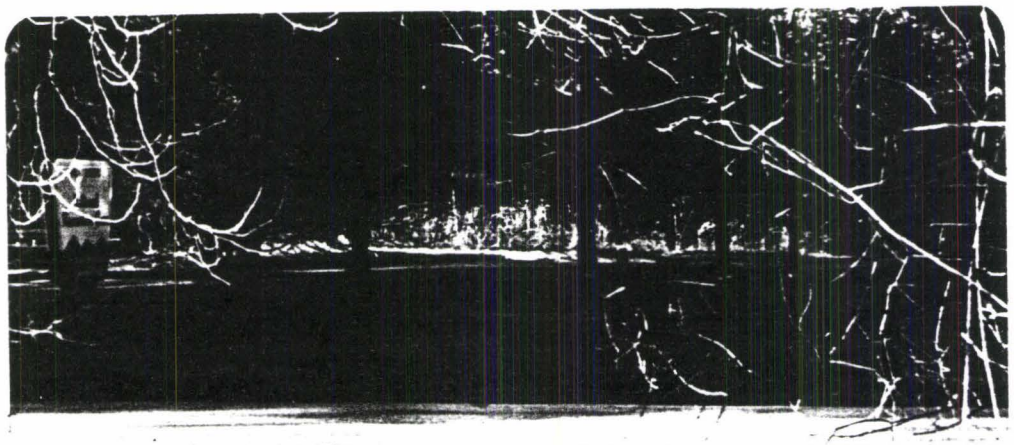
Finally, structure has been found to be an important attribute in holding visitor attention. Washburne and Wagar (1972) found visitors were more interested in holistic than fragmented presentations at visitor centers. Exhibits that had parts making a whole story and that gave cause-and-effect relationships received greater visitor interest than exhibits that provided only isolated facts. Boulanger and Smith (1973) have also suggested other methods for giving structure. These include proceeding from the simple to the complex, proceeding from whole to the parts, presenting a chronological development, progressing from the familiar to the unfamiliar, moving from the seen to the unseen, and showing increasingly broad application of a principle. One or more of these structuring techniques will be used in the development and presentation of the interpretation of Betula uber.

Three different modes (treatments) will be used to convey information on Betula uber: On site interpretation, visitor center interpretation, and naturalist programs. The primary objective of the program is the development of interest and understanding, and at the same time assist with the management and protection of the species. The user could experience a combination of the three interpretive efforts.

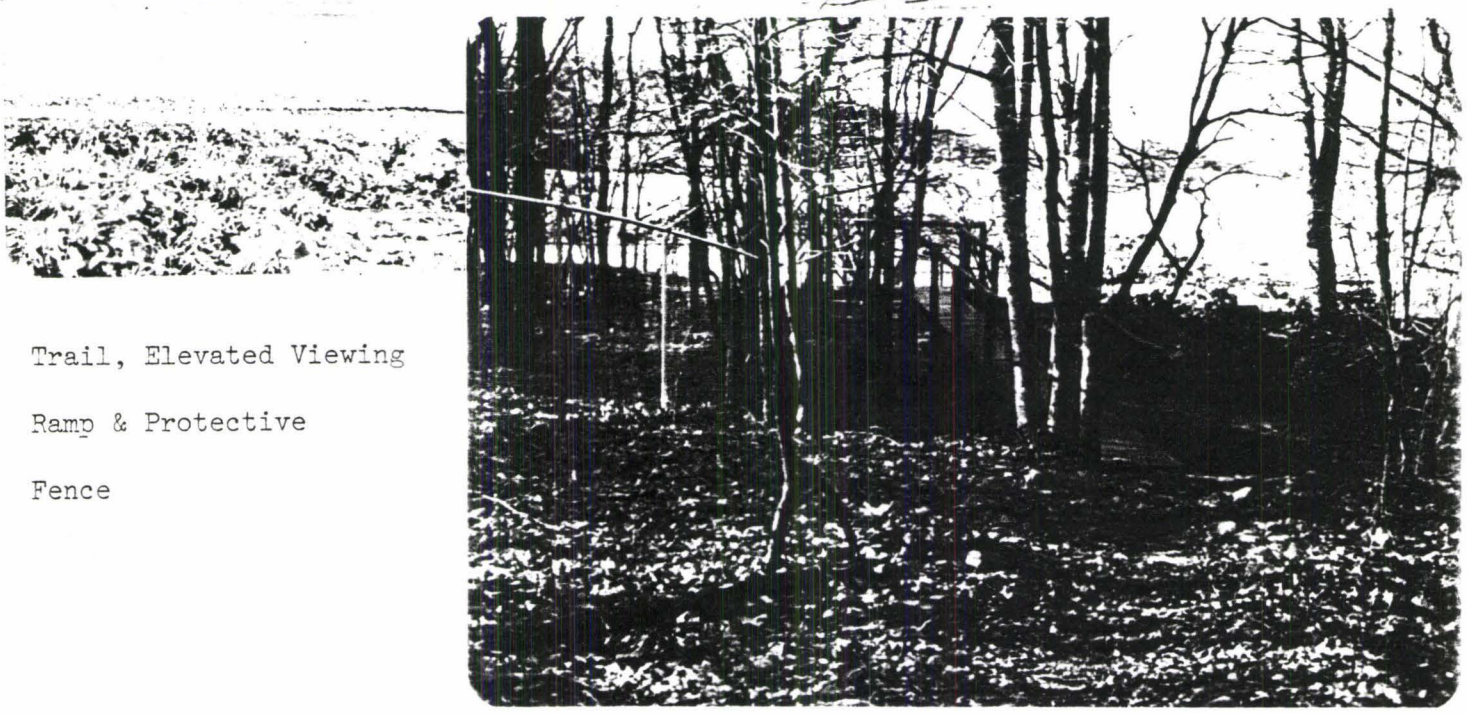
On Site Interpretation

The selected viewing area is located on National Forest land adjacent to State Route 601, approximately 11 miles southeast of its junction with

Highway 16 in Sugar Grove, Virginia. It is located on the bank of Cressy Creek and directly across 601 from the Mount Rogers Youth Conservation Corps Camp. Facilities currently in place are:



Parking Lot & Sign



Trail, Elevated Viewing Ramp & Protective Fence

Future developments of the site planned for completion this summer are shown on the Visitor Viewing Area Plan. This plan (see pages 15 and 16) sets forth the following additions:

1. A split rail fence, like the one across road around parking area, on one side of the trail only.
2. Leave as much native vegetation as possible.
3. The three signs, A, B, C should be about 1 ft. x 2 ft. and the

bottom edge of signs not more than 10" to 12" off of ground and tilted about 20° or 30° from the vertical. They should match the treatment of the Interpretive Sign.

4. Sign E could be white with blue or black lettering and have a Forest Service Shield and J.N.F. identification. The point here is since the fence can't be hidden, play up the "Official Scientific" aspects of it.

5. Trash can, with suggested wording, should be more attractive than the typical "tin can". Possibly a wooden slat barrel type. Might consider an alternative location for trash can.

6. The top rail on the viewing ramps should be replaced with the same split rails as the fence. The fence tied-in to the ramp as shown in the perspective will tie the approach in better to the ramp.

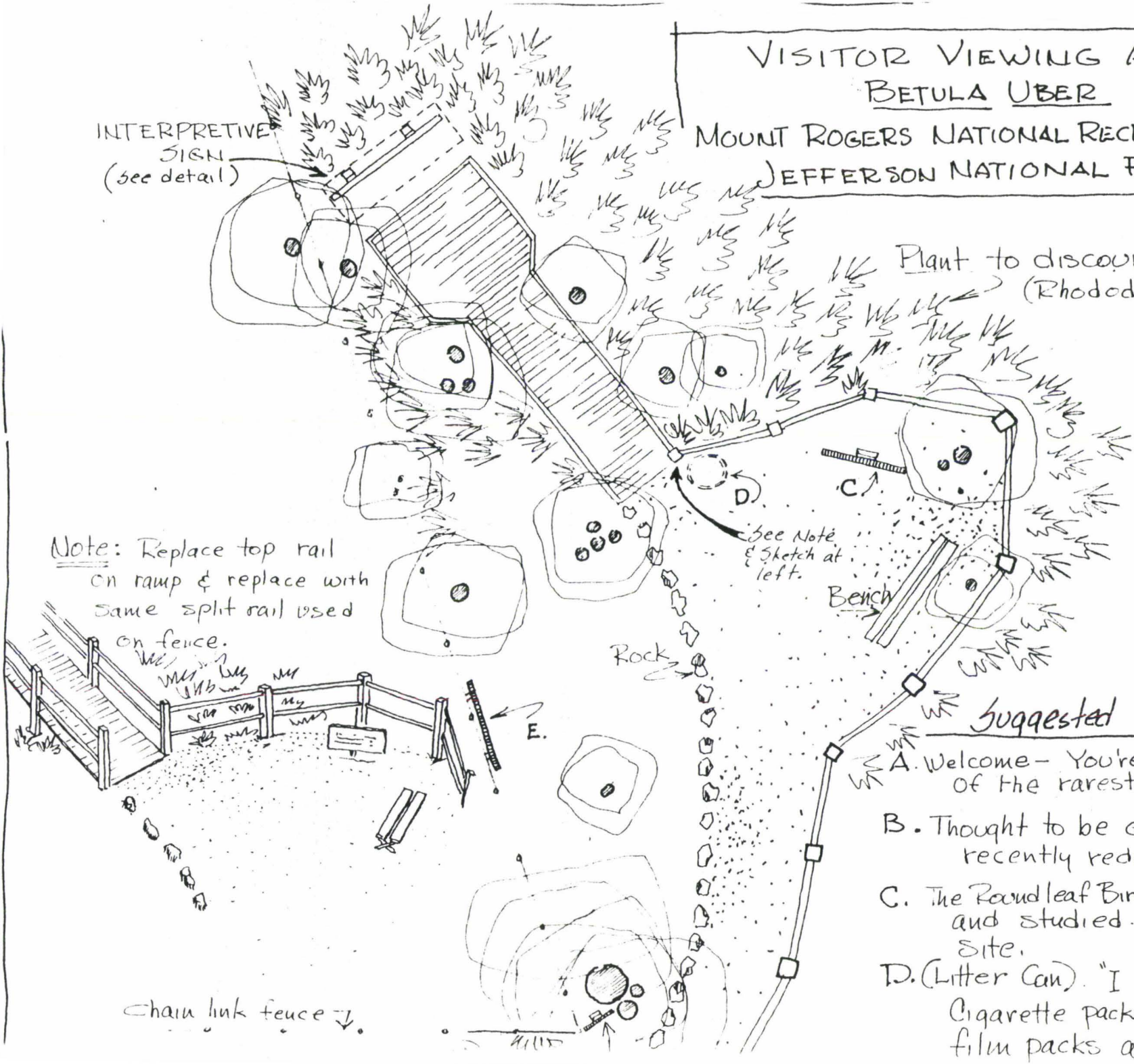
7. Consider a split log, or other simple wooden bench in visitor waiting area.

8. Plant native species, possibly Rhododendron as indicated on plan to discourage vandalism around interpretive sign.

9. Every consideration should be given to visitor safety. A non-skid surface might be considered for the deck. The road crossing should have cross-walk stripping and caution signs. The existing roadside sign should not obscure small children who might run out into the road.

10. The same trail surfacing material should be used across the road into the parking lot, to unify the trail.

VISITOR VIEWING AREA
BETULA UBER
MOUNT ROGERS NATIONAL RECREATION AREA
JEFFERSON NATIONAL FOREST



Suggested Signing

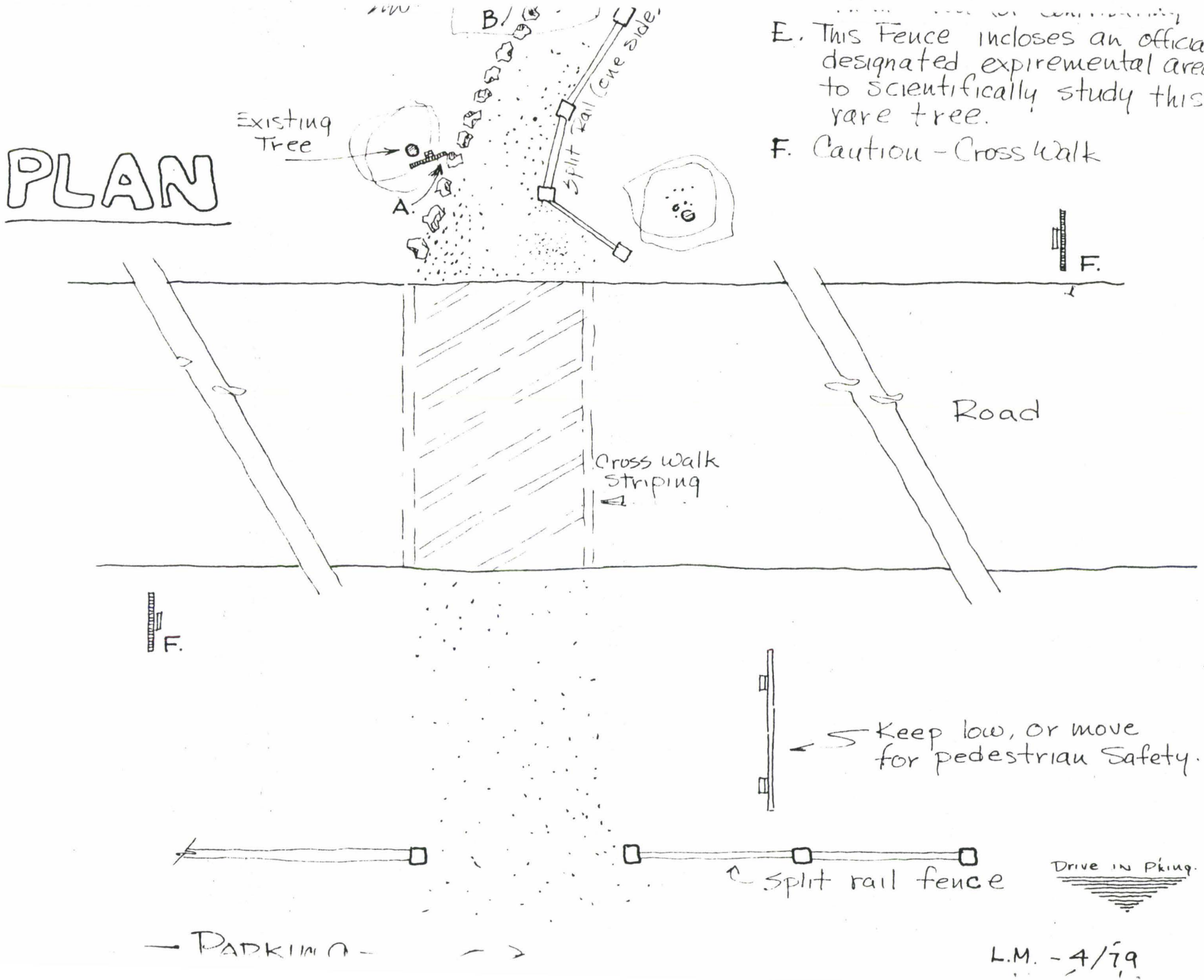
A. Welcome – You're about to see one of the rarest trees on earth.

B. Thought to be extinct... It was recently rediscovered.

C. The Roundleaf Birch is being protected and studied.. here on this site.

D. (Litter Can) "I Collect strings, Cigarette pack, gum wrappers, film packs and other litter.

PLAN



E. This Fence incloses an officially designated expiremental area to scientifically study this rare tree.

F. Caution - Cross Walk

L.M. - 4/79

16

The main thrust of the interpretation will be provided by the interpretive sign located on the end of the elevated viewing ramp. The following comments and information relate to the Interpretive Sign detailed drawing on the following pages.

1. The Interpretive Sign - Should, if possible, be made of birch veneer plywood and sealed with a clear weather proofing. A small sign on the visitor viewing platform might state the fact, and possibly list other uses of birch. But that sign shouldn't interfere with the continuity of other signing.

2. Surface of the sign should be 40 inches from the top rail of the visitors' viewing platform. This should help prevent vandalism to the photographs.

3. The 4 x 4 uprights for the sign will have to be more than 8 ft. long to get the sign at proper viewing height. It is suggested that the sign be hinged as indicated in the detail for easier maintenance. Posts should be at least 36 inches in the ground.

4. Cover photographs with plexiglas. If cut to the suggested shapes and sizes on the layout detail, top edges should be beveled 45 degrees. If carefully done and left rough (with sanding block), the rough beveled edge should hold a stain (black or blue) which will frame the photos. The plexiglas could also be scored about 1/4 inch in from the edge on the underside and stained for a framing effect.

5. Use red circle (1 inch diameter) on photograph and the words "ROUND LEAF BIRCH" beside it. Also a 1 inch red disk on the tree. Paint a red dot on photograph where red disk is placed on tree.

6. Suggested wording for the sign:

   a. Intro. upper left
   "COULD YOU HAVE FOUND IT?"
   Scientists thought it didn't exist any longer.

   b. Lower right corner:
   "While walking through these woods, would you have recognized this tree as one of the rarest on earth? Scientists searched for the Virginia round leaf birch <u>BETULA UBER</u> for over 60 years and thought it extinct. Only 30 individuals are known to exist and all are in this area.

> Round-leaf birch looks much like the common black birch. Both have similar bark and fruiting structures and reach about the same height when mature. (About 50 feet).
>
> But notice the leaves of this rare tree; they are short and have rounded tips; black birch Betula lenta has longer leaves and pointed tips.
>
> Even scientists can't tell us why the round-leaf birch has survived here and nowhere else. This experimental area may someday help us understand better how living things become rare and extinct.

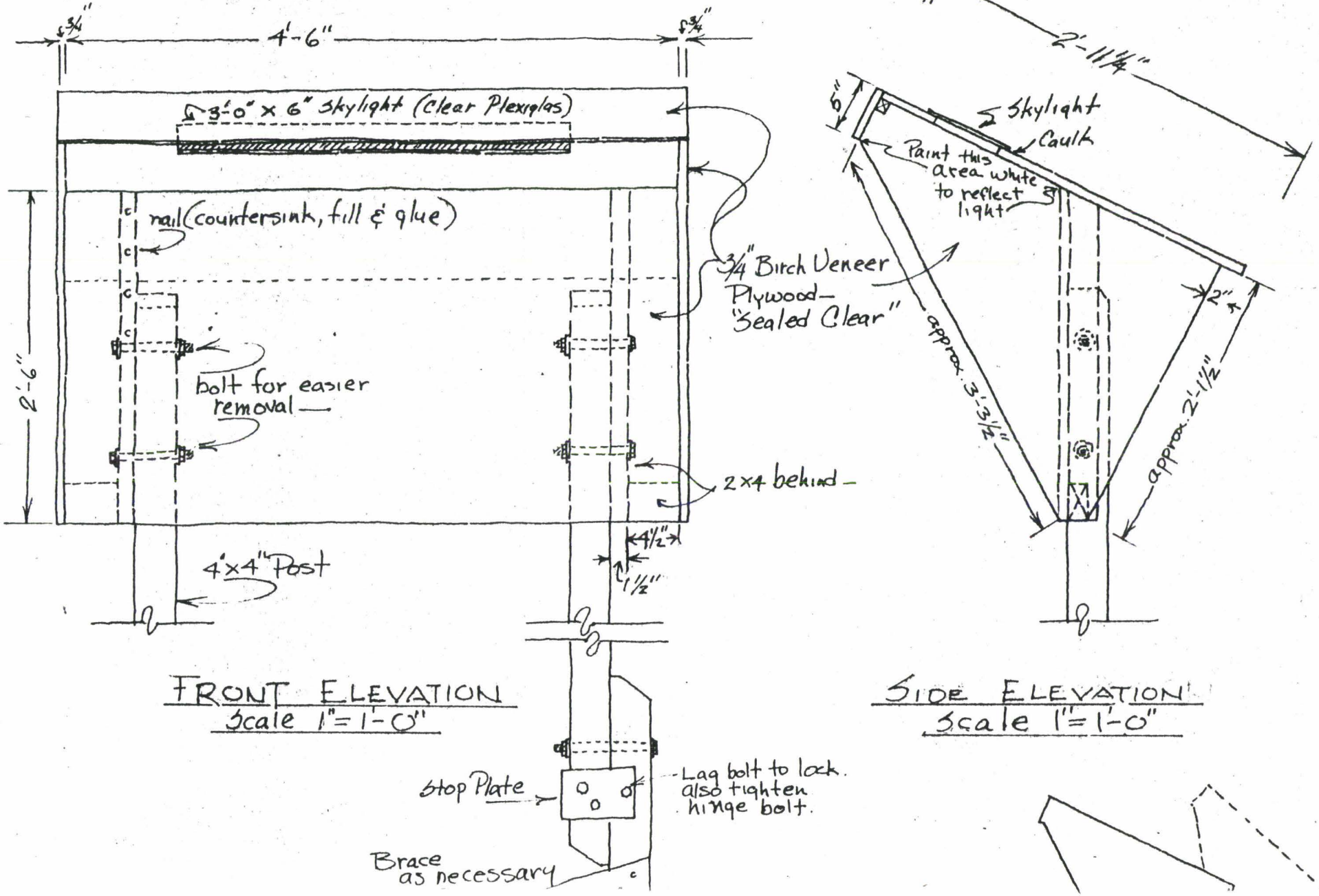
The Endangered Species Act, passed by Congress in 1973, directed the Smithsonian Institution to review and report on the status of native plants in the United States and make recommendations for their conservation. The Smithsonian Report included two trees in the extinct category. One, Franklinia, was last seen in the wild in 1803. The other, "a small tree", was found by two Forest Service employees in 1914, and later described as a variety of the common black birch (Betula lenta var. uber).

In 1945, M. L. Fernald studied birches native to eastern North America and found that this small tree was quite unique. He raised it to specific rank (Betula uber), and placed it in the series Humiles. Because this group of birches generally occurs only north of New Jersey and is not related to most southern birches, the tree acquired botanical significance. Many botanists came to search for this rarity; and in August 1975, a local biologist discovered a small grove of the "extinct tree. The specimen at this locality is the largest known, and is one of the twenty that still exist in the wild.

The Southern Appalachian mountains are world famous for being among the richest known areas for unique plants and animals. During these times of rapid development, it is especially important to preserve our biological heritage, as well as our cultural heritage. For this reason, many individuals and organizations are cooperating to help protect and propagate plants such as this so that future generations might experience, not just read about, their vast

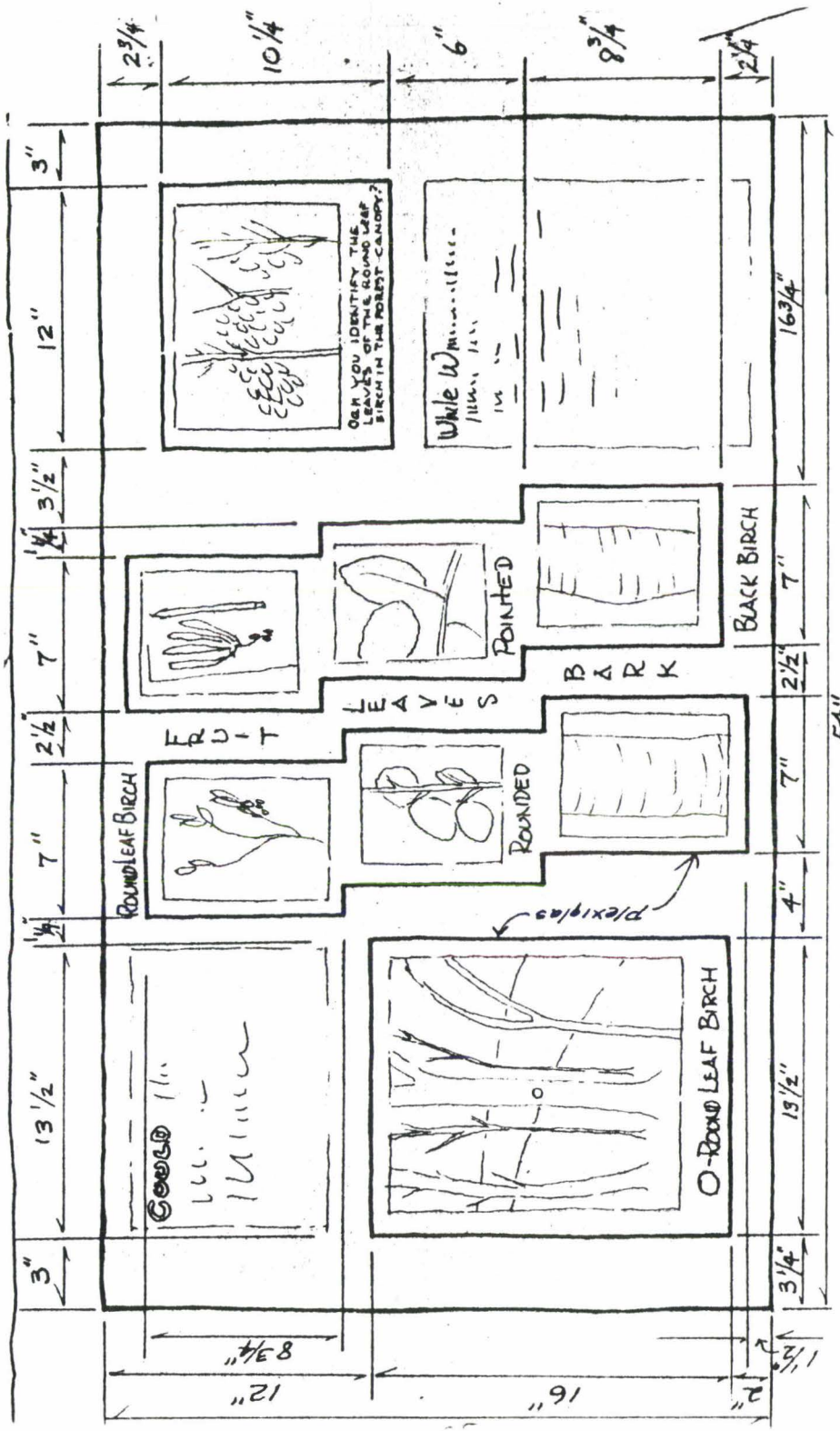
biological heritage. We invite you to look at the rarest tree in North America, and share the excitement and pride of seeing one of the most unique forms of life on this planet.

VISITOR VIEWING AREA
BETULA UBER
INTERPRETIVE SIGN DETAILS

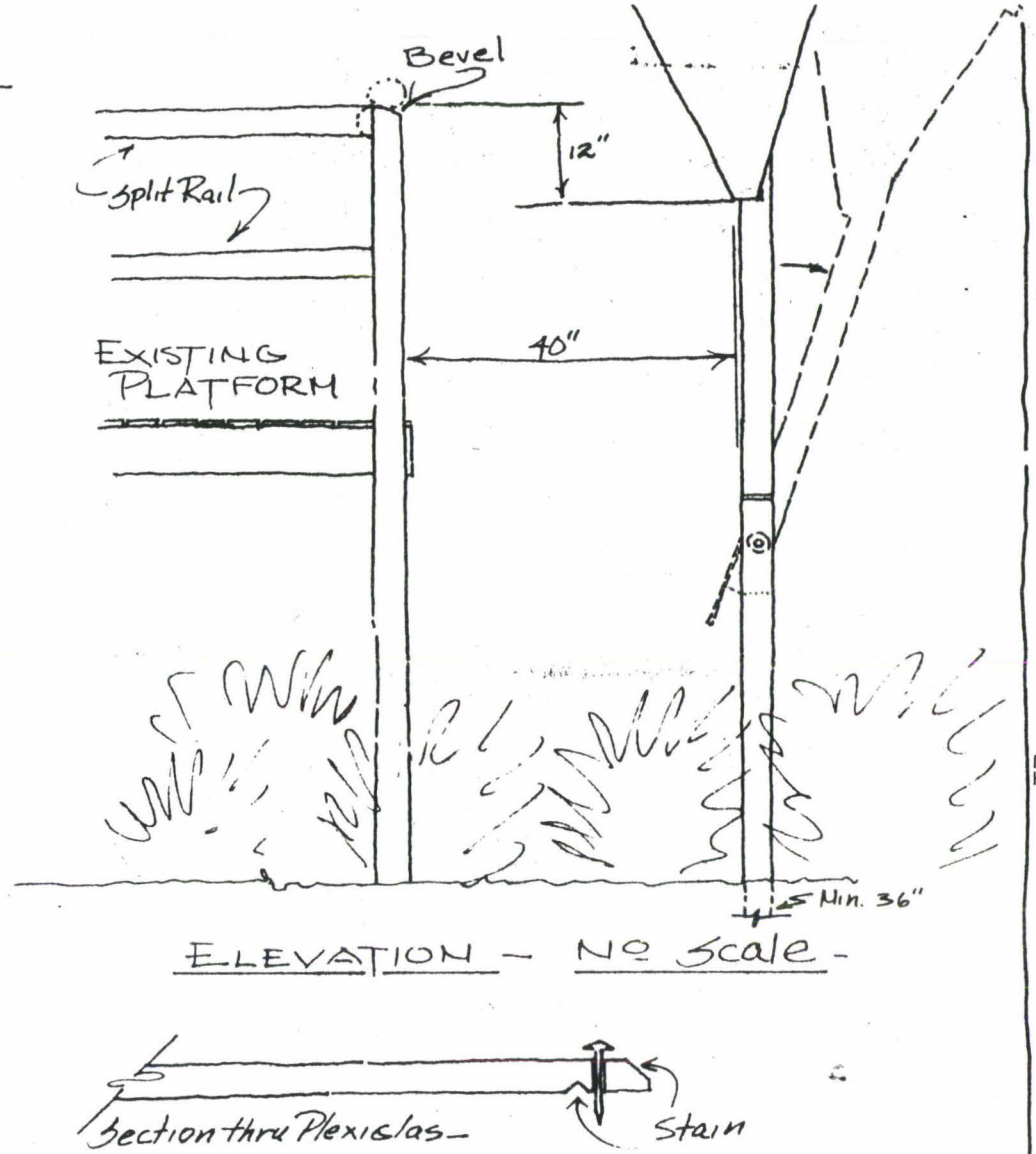


FRONT ELEVATION
Scale 1"=1'-0"

SIDE ELEVATION
Scale 1"=1'-0"



INTERPRETIVE SIGN LAYOUT Scale 1½" = 1'-0"



ELEVATION - No Scale -

MOUNT ROGERS NATIONAL RECREATION AREA
JEFFERSON NATIONAL FOREST

L.M. - 4/79

Visitor Center Interpretation

The Mount Rogers National Recreation Area's combination Visitor Center/office building is located on Highway 16 approximately midway between the towns of Marion and Sugar Grove, Virginia. The Center is only a five-minute drive from Interstate 81. Highway 16 is the main traffic artery into the most developed and most unique section of the National Recreation Area. The famous Appalachian Trail, a National scenic trail, also passes within 20 feet of the Center.

The Visitor Center/office building is an impressive structure constructed of native stone and wood, which in itself attracts visitor attention.

Two large rooms within the building are devoted entirely to visitor information and interpretation. The Visitor Center thus provides an ideal place to introduce a large number of NRA visitors to the round-leaf birch and direct

those desiring additional information to the on-site interpretation at the Round-leaf birch viewing area which is a short distance (1.1 miles) off the main entrance route. Interpretation here will consist of both personal and non-personal. It will consist of an exhibit featuring a slide/tape program, the viewing of a live specimen, ability of the visitor to ask questions and discuss with the personnel manning the information desk, and a strong emphasis or invitation to visit the public viewing area.

Visitor Center Exhibits - Details & Text

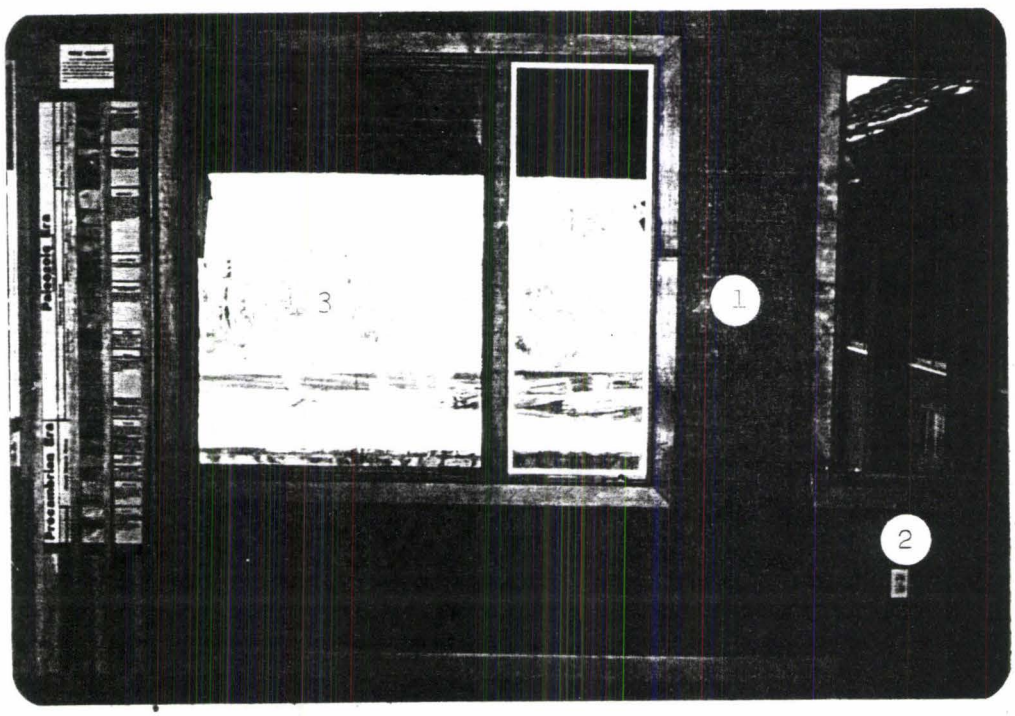


Exhibit Space

The photograph above shows the specific location of the Visitor Center exhibit. It is located 1) on and under the columnar space between the windows, thus blending in design with the adjacent exhibit, 2) near a source of power for the rear projection unit, and 3)near the window through which a round-leaf

birch

seedlings can be viewed. These exhibit details and text are referenced by number to the following Visitor Center Exhibit Sketch. (Pages 29a and 29b)

1) 11 x 14 color photograph of round-leaf birch tree at the public viewing area.

2) Exhibit Title - THE ENDANGERED (½" prestype)
*o VIRGINIA ROUND-LEAF BIRCH (½" prestype)
Betula uber (Ashe) Fernald (¼" prestype)

(* a red dot which ties into a red dot on the round-leaf birch in the photograph.

Text: In June of 1914, William Willard Ashe, a Forester with the USDA, Forest Service, found a new variety of birch tree on the banks of Dickey Creek in Smyth County, Virginia. This tree later became known as Betula uber, the Virginia round-leaf birch.

3) 5 x 7 color photograph (vertical) canopy shot with round-leaf birch among other species.

Text: Unfortunately, the location of the new trees was poorly described. It was over 60 years later before anyone could find them again. In 1975, a local botanist, Doug Ogle, rediscovered Betula uber on one of his many searches along Cressy Creek, a few miles east of Dickey Creek.

4) 8 x 10 color photograph showing labeled leaves of Betula uber and Betula lenta.

Text: Betula uber, often called the Virginia round-leaf birch, is very similar to other birches found in the area. Birch trees normally have an elongated leaf with relatively fine teeth on the margin. The Virginia round-leaf birch has a round leaf with coarse teeth on the margin.

(NOTE: Text between & serves both 4 & 5).

5) 10" x 11" x 2½" framed, pressed leaves of Betula uber

6) 5 x 7 color photograph of people at the elevated viewing ramp looking at Betula uber.

Text: Betula uber is a very rare tree. There are now only 20 growing naturally in the world, all of which are in this area. It was officially listed as endangered on April 26, 1978 and is the only tree species in North America so recognized under the Endangered Species Act of 1973.

7) 5 x 7 color photograph of Betula uber seedling growing on the lawn outside the Visitor Center window. (NOTE: red dot on the seedling in the photograph).

Text: Attempts at propagation of the population by National Arboretum personnel have met with some success. Vegetative propagation was initiated in 1976 when 32 individuals were produced from rooted cuttings. One of these rooted cuttings of Betula uber can be viewed by looking out the window to the left of this exhibit. (NOTE: place a red disc at the seedling).

8) Larger, bolder letters: WOULD YOU LIKE TO SEE THE LARGEST, KNOWN EXISTING Betula uber IN THE WORLD? Then follow these directions a total of 4.7 miles: Go south (right) on Highway 16 3.6 miles to Highway 601 in Sugar Grove. Turn left on Highway 601 and travel 1.1 miles to the round-leaf birch viewing area.

5 x 7 color photograph: Hwy. 601 with large round-leaf birch viewing area sign.

9) The slide/tape program will utilize a Kodak Ektagraphic 450 audioviewer with an 8½" x 8½" viewing screen. The overall size of this unit is 17" high, 12½" wide and 11" deep. The unit will be enclosed in a wood cabinet on a 30" high base with only the screen being visible. It will be slightly tilted to present a better viewing angle.

The following script with indicated slide changes will be utilized:

0 Empty

(1) In 1914, a botanist by the name of William Ashe, discovered a new variety of birch tree while studying (2) the plant life of southwestern Virginia. (3) This tree later became known as Betula uber (meaning fruitful birch). (4) Unfortunately, the location of the new trees was poorly described, and no one could find them again. (5) Scientists searched the area for over 60 years without any luck. (6) In 1975, a local botanist named Douglas Ogle rediscovered Betula uber on one of his many searches along Cressy Creek. (7) From this slide, you can see that the tree is very difficult to identify, so it is easy to understand that so many people were unable to find it. (8) Betula uber, often called the (9) Virginia round-leaf birch, is very similar to (10) other birches also found in the area. (11) The most interesting and distinguishing feature of it is the roundish leaf. (12) Birch trees normally have an elongated leaf with relatively fine teeth on the margins. (13) Betula uber, however, has a round leaf with coarse teeth on the margins. (14) Because the bark of the tree is identical to that of other birches, (15) the shape of the leaf is the only way to distinguish it from the others. (16) Betula uber is a very rare tree. (17) There are approximately 20 growing naturally in the world, all of which are in this area. (18) Because it is so rare, the U. S. Fish and Wildlife Service placed it on the Endangered Species List in 1978. It is the only North American tree on the list. (19) This allows for protection of the tree so scientists can (20) further study its characteristics, (21) and prevent it from becoming extinct. (22) Peter Mazzeo, a botanist at the National Arboretum in Washington, D. C. (23) is trying to grow more round-leaf birches from seeds and cuttings taken from the original population. (24) With any luck, Mazzeo and his colleagues at the Arboretum will be able to protect the tree from extinction. (25) This slide shows

Douglas Ogle on the left, Peter Mazzeo on the right, examining a cutting from one of the trees. You might want to ask yourself the same questions they have asked. Why are there so few of these trees? Are they hybrids of one of the more common birches? (26) Are these the last trees of the once large population that spread throughout the East? If so, what happened to them? These are questions that need to be answered to better understand this rare tree.

Slide Descriptions:

1. General view of forested mountains.
2. Closer shot of general vegetation.
3. Round-leaf birch leaves & branches in the canopy.
4. General shot of forested area along Cressy Creek.
5. Scientist on banks of Cressy Creek.
6. Cressy Creek area.
7. General forest canopy in the area.
8. Round-leaf birch & YCC enrollees.
9. Upper bole & branching of round-leaf birch.
10. Upper branches of common birches in the area.
11. Leaf of round-leaf birch.
12. Leaf of common birches in the area.
13. Close up of round-leaf birch leaf.
14. Bole shot of round-leaf birch.
15. Leaves of round-leaf birch.
16. Round-leaf birch with fence & kids in background.
17. A natural round-leaf birch seedling.
18. Protective fence with round-leaf birch in center background.
19. Elevated viewing ramp with protective fence & round-leaf birch in the background.

20. Birch fruiting body.

21. Crown shot of round-leaf birch.

22. Drawing of National Arboretum.

23. Rooted cuttings of round-leaf birch in the National Arboretum.

24. Round-leaf birch seedling developed from rooted cutting.

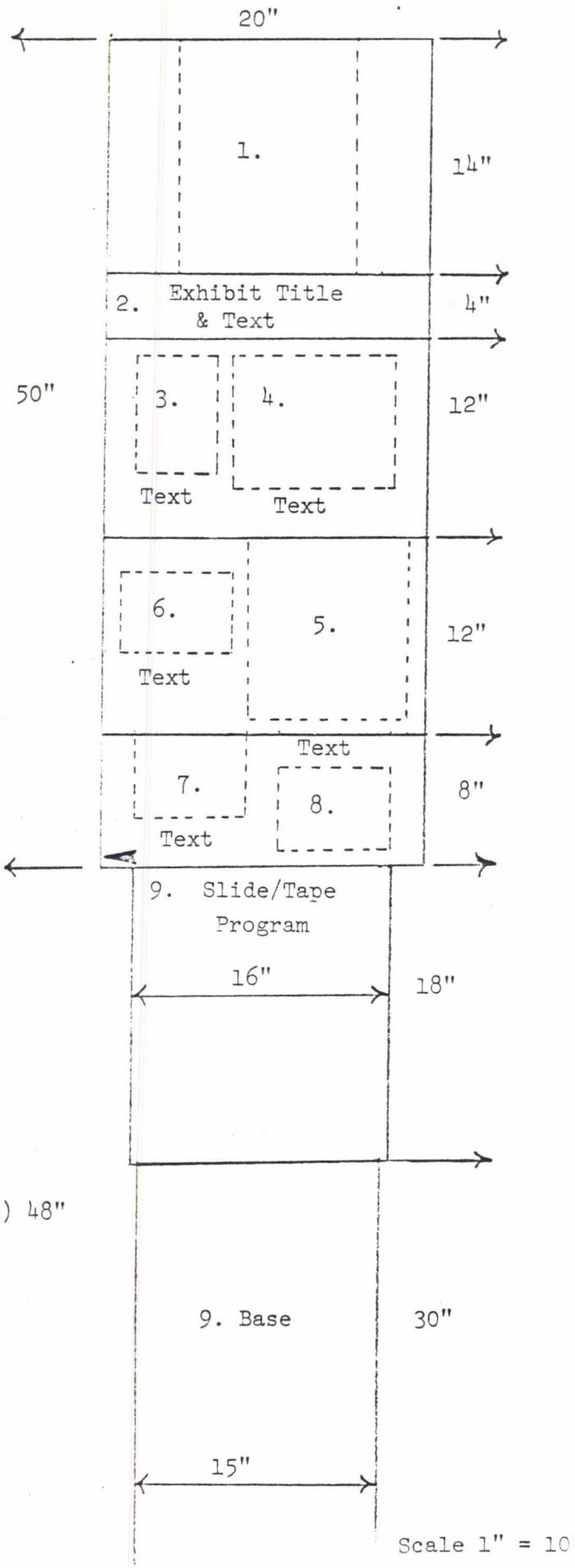
25. Ogle & Mazzeo examining a cutting from round-leaf birch.

26. General panoramic shot.

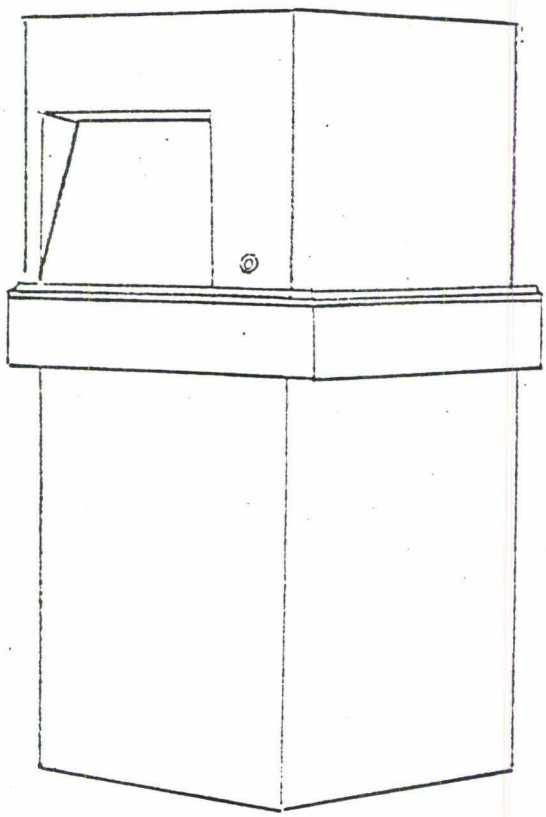
VISITOR CENTER EXHIBIT SKETCH

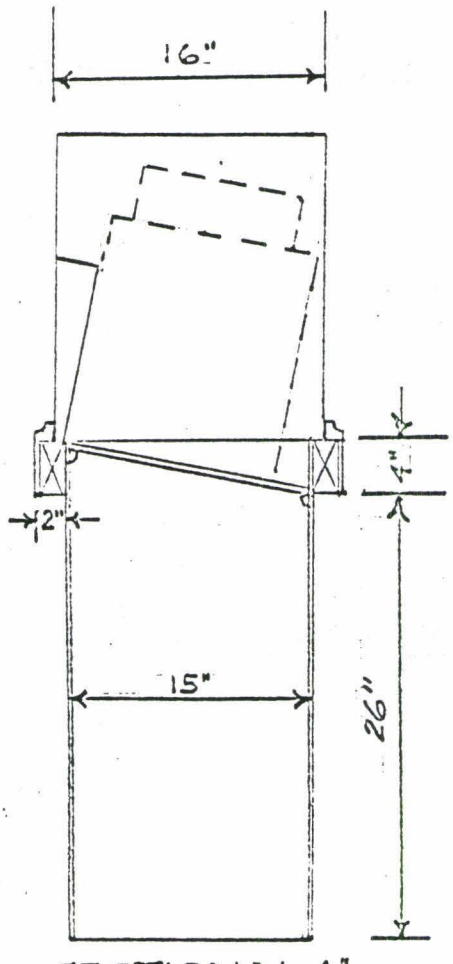
(A) This section of the Exhibit utilizes the columnar space between the windows.

(B) Base supporting rear projection equipment. For more details see next page.

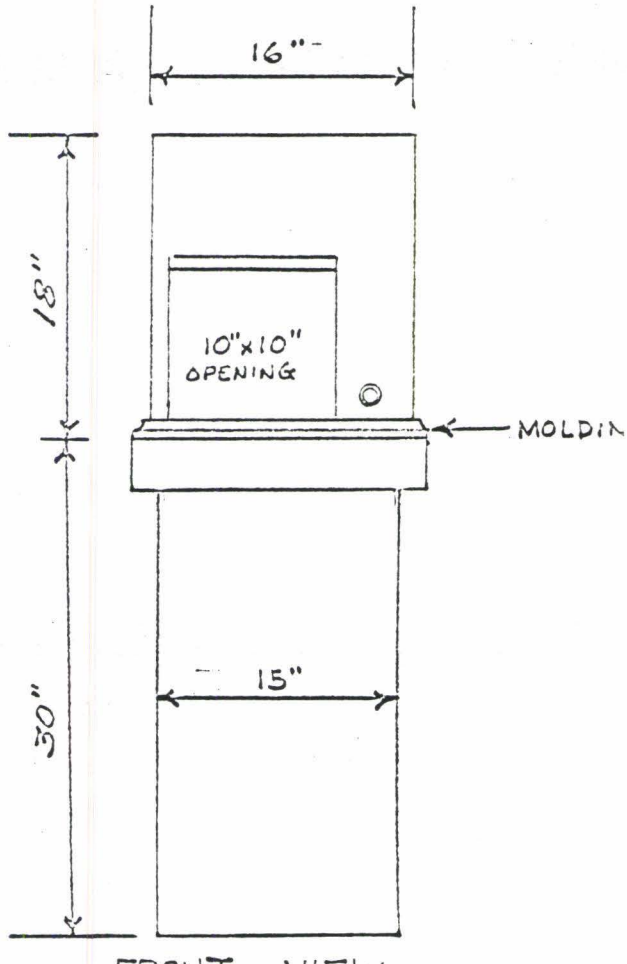


Detailed Drawing of Base and Rear Projection Unit





SECTION "A-A"



FRONT VIEW

Naturalist Programs

Naturalist programs on the National Recreation Area offer another excellent opportunity for providing information and interpretation about the round-leaf birch. Currently these programs are held during the main use season (Memorial Day to Labor Day) at the Grindstone Campground. Within the next two years, the Beartree Recreation Complex will have facilities to accommodate these types of programs.

These efforts will consist of two related parts: 1) evening slide programs given at the Campground amphitheater and followed the next day by 2) a tour to the public viewing area and the Mount Rogers Visitor Center. In this manner, the Recreation visitor will have an opportunity to participate in all phases of the interpretive program.

The slide program has not yet been developed, but will be a more detailed expansion of the one used for the slide/tape program at the Visitor Center.

Summary

The Virginia round-leaf birch was originally discovered by W. W. Ashe in 1914 presumably along the banks of Dickey Creek in Smyth County, Virginia. For over 60 years, scientists searched the area without any trace of the tree. In 1975, a local botanist named Douglas Ogle rediscovered Betula uber on one of his many searches along Cressy Creek.

On May 18 and 19, 1977, a group designated as the Betula uber Protection, Management and Research Coordinating Committee was formed to outline and carry out steps necessary to preserve the species. This group outlined seven emphasis areas: 1) protection of the existing natural population, 2) propagation of the population and broadening the genetic base to the extent possible, 3) search

for new populations, 4) basic research on species biology, 5) public relations, 6) gaining financial support for management and research, and 7) providing a mechanism for effective management of the pool.

The Virginia round-leaf birch was officially listed as an endangered species on April 26, 1978. It is the only woody plant in North America so recognized under the Endangered Species Act of 1973. Since its rediscovery in August 1975, it has gained widespread attention.

Considerable amount of effort has gone into the protection and management of the species. Public information and interpretation has been a key tool of management in that it has been designed to provide information to the public while directing their attention to the one area where protection can best be afforded.

The overriding goal of interpretation is the translation of information into understandable terms. Interpretation seeks to make natural or cultural history understandable and enjoyable. Some of the factors to consider in the development and presentation of an interpretive program are the location for interpretation, media for interpretation, and audience attention.

Three different modes (treatments) will be used to convey information on Betula uber: On-site interpretation, Visitor Center interpretation and naturalist programs. The primary objective of these programs is the development of interest and understanding, and at the same time assist with the management and protection of the species.

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APPENDIX I

MINUTES TO THE FIRST MEETING OF THE Betula uber PROTECTION, MANAGEMENT, AND RESEARCH COORDINATING COMMITTEE

The Betula uber Protection, Management, and Research Coordinating Committee met at the Headquarters Building for the Mount Rogers National Recreation Area on May 18 and 19. All people listed were present except Dr. Core who was unable to attend due to a conflict in his schedule.

May 18, 1977

The meeting was opened by Forest Supervisor Penfold. He expressed appreciation for the interest and participation of the group. The general theme of all during the opening remarks was the need for mutual cooperation between all parties.

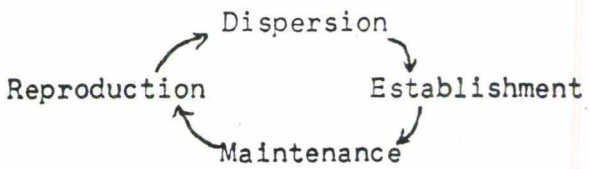
A report on Propagation of the Species to date was given by Peter Mazzeo. This consists of 32 rooted cuttings and approximately 200 seedlings at the National Arboretum.

After a brief discussion, it was agreed that it would be desirable if all members had an opportunity to view the entire population in the field. The remainder of the day was spent viewing and discussing the population on all three properties and reviewing the Forest Service Protection Plan. Minor revisions were made, and a copy of the revised plan is attached.

May 19, 1977

Terry Sharik led a discussion of Research and Study Project outline needs based on work done by Massey. The objective was defined as: Preserve Betula uber (gene pool); a related objective was to define Betula uber (species biology).

MASSEY'S MODEL



After much discussion the following outline was proposed and accepted by the group:

PRESERVATION OF BETULA UBER-AN ENDANGERED SPECIES

I. Protection (of existing natural population)
II. Propagation of population (and if possible broaden genetic base)
III. Search for new populations
IV. Basic research on Species biology (Massey model) (Broaden genetic base)
V. Public relations
VI. Gaining support for management and research ($ and manpower)
VII. Provide mechanism for management of gene pool (committee ?)

INPUTS

I. Protection of Existing Natural Populations

Responsibility: USFS
Garland Ross, Ray Haulsee, Doug Ogle, Biologist
Fencing - Brock and Private landowners
Develop a monitoring checklist - Ogle
Flood control - Forest Service
Posting of Private land - Ross and Haulsee

It was agreed that public viewing would be discouraged on the private land. These trees would be shown only at the discretion of the private landowner. The general public would be referred to the Forest Service area which is specifically being designed as a public viewing area.

A method to promote the future integrity of the species on private lands was discussed without any proposal for the long range.

II. Propagation: For distribution
For maintenance of the gene pool

Responsibility: National Arboretum; Southeastern Station - Olson; Institute of Forest Genetics, Rhindelander, Wis. Knud Clausen

Summary of Action to Date: 32 cuttings have been rooted from three individual seedlings this year. They will continue to propogate from the three seedlings in the field.

A. Cultivation
1. Asexual propagation (cuttings and grafting)
2. Sexual propagation (seeds)

B. Replacement at the discovery site of the original genotype - Ogle

C. Establishment and Distribution of the Population.
1. Plantings
2. "Seed orchards" - VPI, Southeastern Station
3. Site manipulation - Terry Sharik, Doug Ogle and Forest Service

D. Broadening of genetic base
1. Controlled crosses

III. Search for new populations
Responsibility - Ogle and Forest Service

A. Coordination of search efforts
B. Search plan

IV. Basic Research on Species Biology - Develop Research Plan

Responsibility: Terry Sharik, Dave Olson, Doug Ogle, Peter Mazzeo

- - - Variation and Evolutionary Relationships
- - - Critical habitat
- - - Massey Model
- - - Review of Current Knowledge

Resulting in Development of Research Proposals. Above listed sub-committee will develop a time table, funding and personnel needed to develop the Research Plan. Dave Olson will provide examples of plans developed by the Forest Service using the convergence method.

V. Public Relations

A. Publicize Committee and Plans

1. Announcement of Management Plans and Formation of Committee.

Mazzeo
a. Castenea
b. American Forests
c. Virginia Forests
d. Bio-Science
e. Endangered Species Newsletter
f. Plant Science
g. Bulletin of Ecological Society of America

2. General Public Announcements - Penfold

a. Copy of the News Release on the May 18 and 19 meeting is attached.

b. Interpretation of Betula uber - Sharik

1. Signs
2. Brochure
3. Slide-tape presentation

In order to begin the interpretive work, Terry Sharik requested that each member of the committee send him the following information within 1-2 weeks:
Why? How? To Preserve Endangered Species.

c. Availability of Plant Materials -
National Arboretum - Att: Peter Mazzeo

VI. Gaining Support For Management and Research - ($ and manpower)

A. Listing of possible funding sources

1. National Forest System - Penfold
2. Forest Service Research and S & PF - Olson
3. State of Virginia - Gnegy
   Including Va. Division of Forestry and Va. Comm. of Game and Inland Fisheries.
4. Endangered Species Office - Gnegy
5. National Science Foundation - Sharik
6. Highlands Biological Station - Olson
7. Private Donors - All
8. Virginia Forestry Association - Penfold

B. Reasons for support for Betula uber
1. Listed in the top 15 on the endangered plants list.
2. Only woody plant on the list ?
3. Organized group highly interested in the protection, management, and research for the Species.

VII. Provide Mechanism for Management of the gene pool

Previously named individuals through mutual benefits and interests agreed to form the Betula uber Protection, Management, and Research Coordinating Committee. This committee would control all activities dealing with the entire population. Forest Supervisor Penfold will contact all members in August to make arrangements for the next meeting.

Two Other General Ground Rules were made:

1. The central file for all committee activities will be maintained at the Headquarters for the Mount Rogers National Recreation Area. A file copy of all correspondence, plans, etc., should be sent to that office.

2. Each member of the committee should keep the others posted on any planned activity dealing with Betula uber.

Sincerely,

Kirby A. Brock

KIRBY A. BROCK
Area Ranger

Attachments

COMMITTEE MEMBERS

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